



# Australian Bureau of Statistics

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## ABS RESPONSE TO RECENT CONCERNS EXPRESSED ABOUT EMPLOYMENT ESTIMATES

### Introduction

Some commentators on economic and labour force issues have claimed that recent estimates of employment growth have been underestimated. They have indicated that this is due to the way that the ABS benchmarks the employment estimates to the population estimates. One article stated:

*"On one estimate, once the figures are adjusted for the erroneous forecasts, at least 100,000 of the jobs supposedly created in 2010 in fact arrived in 2011."*

To ensure there is a clear understanding of the issue, this article describes ABS benchmarking process and how it impacts on the quality of labour force estimates.

### The benchmark process

Using best practice approaches, the ABS labour force estimates are drawn from a representative sample of the Australian households. In order to achieve this representation, the labour force estimates are benchmarked to an independent series of population estimates.

In an ideal world, there would be high quality, contemporary population estimates available each month to use as benchmarks. However, two factors work against this:

- Australia's official population estimates are compiled quarterly, and lag the labour force estimates by up to eight months. This means that they must be projected forward to derive contemporary population benchmarks.
- The initial population estimates are preliminary and therefore subject to revision. "Revised" population estimates are only available six quarters after the initial estimates have been produced. However, every five years the population estimates are themselves rebased to the Census of Population and Housing.

These two factors mean that the population benchmarks underpinning the labour force estimates are potentially subject to revision. The extent to which these series might be revised is discussed in more detail below.

It could be argued that every time a new set of population estimates becomes available, then the labour force benchmarks and estimates should be revised. However, comprehensive benchmarking exercises are costly, and generally have only a marginal impact on movement and level estimates – any impacts are typically well within the 95 per cent confidence interval on the estimates. Because of this, ABS practice is not to frequently revise the benchmarks, and

therefore the employment estimates derived from them.

There are two exceptions to this. First, every five years, following the rebase of the population estimates to the Census, all labour force benchmarks are revised and this causes revisions to labour force estimates through the time series back to the previous Census. Second, if there are otherwise highly significant revisions to the population estimates then the ABS will undertake a 'one off' rebenchmarking exercise for all affected benchmarks. It did this in the July 2010 issue of the monthly labour force estimates.

Because of the current interest in the potential extent of revision to employment estimates associated with revised population estimates, this article includes an analysis of what could be expected based on the current knowledge of Australia's population estimates.

## **The underlying official population estimates**

The most reliable estimate of the population is the Estimated Resident Population (ERP), which is published on a quarterly basis in the publication *Australian Demographic Statistics (cat. No. 3101.0)*. ERP is an estimate obtained by adding to the estimated population at the beginning of each period the component of natural increase (births less deaths) and the component of net overseas migration (NOM). Estimates of the resident population are based on Census counts, to which are added the estimated Census net undercount and the number of Australian residents estimated to have been temporarily overseas at the time of the Census. Overseas visitors in Australia are excluded from this calculation.

When ERP is first published (as preliminary), it is subject to revision due to lags and accumulations in birth and death registrations and the use of modelled preliminary NOM estimates. The preliminary NOM estimates are replaced by final NOM data after six quarters. Preliminary ERP is revised every six months, in the March and September quarter publications, until its status is changed to 'revised' six quarters after initial publication (with the inclusion of final NOM data).

Preliminary NOM estimates are modelled using a propensity model – applying information on traveller behaviour from the previous year to the number of travellers in the current period, taking account of the category of travel, age, country of citizenship, state/territory of usual residence and expected duration of stay. The propensity model was improved from a 'two-year ago' propensity to a 'one-year ago' propensity in September quarter 2008.

At the time of the last rebenchmarking exercise in July 2010, the most recent preliminary estimate of ERP was for the December quarter 2009 at 22,155,400. This estimate is now revised at 22,131,200, a difference of 0.1%. The preliminary estimate for the March quarter 2010 was 22,271,900; the revised estimate for that quarter is 22,232,000, a difference of 0.2%. The revised ERP for subsequent quarters is not yet available.

The calculation of preliminary ERP combines information from a range of data sources to provide the most reliable estimate of the population at the time of publication. Revisions to ERP ensure that the subsequent improvements in the source data are reflected in the estimated population.

For more information on the underlying population estimates, please refer to the Explanatory Notes in *Australian Demographic Statistics (cat. No. 3101.0)*.

## **Projecting the official population estimates forward**

The projection used to derive population benchmarks for the Labour Force Survey depends on a

number of assumptions about the different components of population growth (at the Australian level: births and deaths; and net overseas migration).

For births and deaths, it is assumed that growth is unchanged from the most recent preliminary ERP figures. For NOM projections, the main source of information is the NOM forecasts produced by the Department of Immigration and Citizenship, supplemented with information on overseas arrivals and departures (as published in *Overseas Arrivals and Departures*, cat. no. 3401.0).

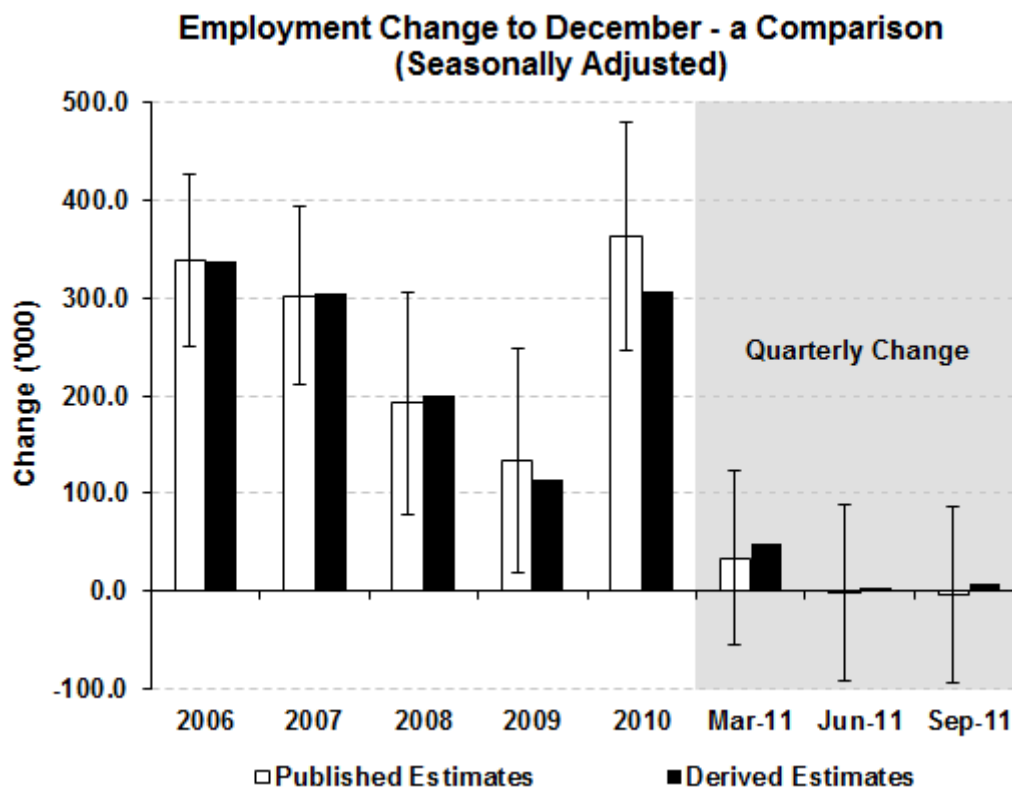
Using the most recent preliminary ERP as the 'jumping off point', ERP is projected forward one year and then interpolated back to the previous Labour Force benchmark to ensure a consistent series of benchmarks. Past Labour Force benchmarks are generally not revised.

When ERP is revised, the revisions will impact on the most recent value of ERP because the most recent value is calculated by adding natural increase and NOM for the period to the previous value of ERP. In this way, the revision impacts on the new 'jumping off point' for labour force benchmarks. It flows from the jumping off point through to the benchmark nine months forward, creating a phase shift in the revision of at least 12 months. For example, if the June quarter 2010 preliminary ERP is revised in the September quarter 2010 publication, part of this revision will impact on the interpolation of June quarter 2011 Labour Force benchmarks (although not the full revision due to the projection past the current period and interpolation back).

### **The impact of revisions to population benchmarks**

It is possible to calculate current employment estimates based on the most recent values of ERP for all quarters, as if the labour force benchmarks were revised each quarter following the publication of the latest quarter ERP. Below is a graph comparing the seasonally adjusted employment growth for the five calendar years to 2010 and for the three available quarters in 2011. The white bars are based on the currently published series (source: *Labour Force*, April 2012, cat. no. 6202.0), and the light grey bars are based on current employment to population ratios when applied to the current ERP figures for that period (source: *Australian Demographic Statistics*, September quarter 2011, cat. No. 3101.0).

In the currently published estimates, there was employment growth of 363,000 people in 2010. If the ABS revised to the latest ERP, this number would change to an increase of 308,000 people. This is well within the lower limit (based on a 95% confidence interval) of the published estimate, which is an increase of 247,000 people in 2010. Similarly, in the nine months to September 2011, the published estimate is employment growth of 28,000 people; if the ABS revised to the latest ERP, this number would change to an increase of 59,000 people – also well within the upper limit of the published estimate. Therefore, revising to the latest ERP does not significantly change the employment estimates when the confidence interval is taken into account. Furthermore, the ERP published in September 2011 is preliminary for June quarter 2010 and later periods and is subject to further revisions in the future.



*Note: Due to the rebenchmarking exercise in July 2010, it can be expected that revisions prior to 2009 would be small.*

It is the view of the ABS that the increased cost associated with performing more frequent revisions to labour force population benchmarks would be inefficient as any revisions would not significantly improve the quality of estimates; rather, the series would become 'noisier' from frequent revisions. The ABS would also encourage users to take a broader view of the estimates that are produced and not focus on a particular estimate as a guide to the performance of the labour market as a whole.

## Conclusion

Benchmarking the labour force estimates to population estimates is a complex process that can impact on the quality of both level and movement estimates. The ABS seeks to work closely with users to ensure that they are well aware of the limitations of the population benchmarks underpinning the labour force estimates and any impacts that these have on statistics. The ABS is confident that its current methods are the best possible given the availability of information. While more frequent revisions to the labour force population benchmarks would be possible, this would be costly and most likely generate 'noise' in the time series that would be unhelpful to analysis. However, the ABS continuously reviews its methods to take account of changing circumstances and is keen to continue hearing the informed views of users so these can be taken into account.

For further information please contact Labour Force on Canberra (02) 6252 6525 or by email at [labourforce@abs.gov.au](mailto:labourforce@abs.gov.au).

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